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SEQUENCE LISTING

0110 Pinkins, Randy
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0120 Transgenic plants expressing MinD or MinE and an efficient
method for plant chloroplast transformation and gene expression

0130 028750-219

0140 US 10/67,989

0141 2002-01-18

0150 US 68/267,483

0161 2001-07-09

0160 18

0170 FastSEQ for Windows Version 4.0

0210 1

0211 326

0212 PRT

0213 Arabidopsis thaliana

0400 1

Met Ala Ser Leu Arg Leu Phe Ser Thr Asn His Gln Ser Leu Leu Leu
1 5 10 15
Pro Ser Ser Leu Ser Gln Lys Thr Leu Ile Ser Ser Pro Arg Phe Val
20 25 30
Asn Asn Pro Ser Arg Arg Ser Pro Ile Arg Ser Val Leu Gln Phe Asn
35 40 45
Arg Lys Pro Glu Leu Ala Gly Glu Thr Pro Arg Ile Val Val Ile Thr
50 55 60
Ser Gly Lys Gly Gly Val Gly Lys Thr Thr Thr Ala Asn Val Gly
65 70 75 80
Leu Ser Leu Ala Arg Tyr Gly Phe Ser Val Val Ala Ile Asp Ala Asp
85 90 95
Leu Gly Leu Arg Asn Leu Asp Leu Leu Gly Leu Glu Asn Arg Val
100 105 110
Asn Tyr Thr Cys Val Glu Val Ile Asn Gly Asp Cys Arg Leu Asp Gln
115 120 125
Ala Leu Val Arg Asp Lys Arg Trp Ser Asn Phe Glu Leu Leu Cys Ile
130 135 140
Ser Lys Pro Arg Ser Lys Leu Pro Met Gly Phe Gly Gly Lys Ala Leu
145 150 155 160
Glu Trp Leu Val Asp Ala Leu Lys Thr Arg Pro Glu Gly Ser Pro Asp
165 170 175
Phe Ile Ile Ile Asp Cys Pro Ala Gly Ile Asp Ala Gly Phe Ile Thr
180 185 190
Ala Ile Thr Pro Ala Asn Glu Ala Val Leu Val Thr Thr Pro Asp Ile
195 200 205
Thr Ala Leu Arg Asp Ala Asp Arg Val Thr Gly Leu Leu Glu Cys Asp
210 215 220
Gly Ile Arg Asp Ile Lys Met Ile Val Asn Arg Val Arg Thr Asp Met
225 230 235 240

Ile Lys Gly Glu Asp Met Met Ser Val Leu Asp Val Gln Glu Met Leu
 245 250 255
 Gly Leu Ser Leu Leu Gly Val Ile Pro Glu Asp Ser Glu Val Ile Arg
 260 265 270
 Ser Thr Asn Arg Gly Phe Pro Leu Val Leu Asn Lys Pro Pro Thr Leu
 275 280 285
 Ala Gly Leu Ala Phe Glu Gln Ala Ala Trp Arg Leu Val Glu Gln Asp
 290 295 300
 Ser Met Lys Ala Val Met Val Glu Glu Glu Pro Lys Lys Arg Gly Phe
 305 310 315 320
 Phe Ser Phe Phe Gly Gly
 325

0210 - 1

0211 - 184

0212 - PRT

0213 - *Chlorella vulgaris*

0400 - 1

Met Val Phe Ser Thr Gly Asn Gly Asn Gly Asp Asp Asn Ser Lys Gly
 1 5 10 15
 Leu Glu Arg Val Ile Val Ile Thr Ser Gly Lys Gly Gly Val Gly Lys
 20 25 30
 Thr Thr Thr Thr Ala Asn Leu Gly Met Ser Ile Ala Arg Leu Gly Tyr
 35 40 45
 Arg Val Ala Leu Ile Asp Ala Asp Ile Gly Leu Arg Asn Leu Asp Leu
 50 55 60
 Leu Leu Gly Leu Glu Asn Arg Val Leu Tyr Thr Ala Met Asp Ile Val
 65 70 75 80
 Glu Gly Gln Cys Arg Leu Asp Glu Ala Leu Ile Arg Asp Lys Arg Trp
 85 90 95
 Lys Asn Leu Ala Leu Leu Ala Ile Ser Lys Asn Arg Gln Lys Tyr Asn
 100 105 110
 Val Thr Arg Lys Asn Met Gln Asn Leu Ile Asp Ser Val Lys Glu Leu
 115 120 125
 Gly Phe Gln Phe Val Leu Ile Asp Cys Pro Ala Gly Ile Asp Val Gly
 130 135 140
 Phe Ile Asn Ala Ile Ala Ser Ala Gln Glu Ala Val Ile Val Thr Thr
 145 150 155 160
 Pro Glu Ile Thr Ala Ile Arg Asp Ala Asp Arg Val Ala Gly Leu Leu
 165 170 175
 Glu Ala Asn Gly Ile Tyr Asn Val Lys Leu Leu Val Asn Arg Val Arg
 180 185 190
 Pro Asp Met Ile Gln Lys Asn Asp Met Met Ser Val Arg Asp Val Gln
 195 200 205
 Glu Met Leu Gly Ile Pro Leu Leu Gly Ala Ile Pro Glu Asp Thr Ser
 210 215 220
 Val Ile Ile Ser Thr Asn Lys Gly Glu Pro Leu Val Leu Asn Lys Lys
 225 230 235 240
 Leu Thr Leu Ser Gly Ile Ala Phe Glu Asn Ala Ala Arg Arg Leu Ile
 245 250 255
 Gly Lys Gln Asp Tyr Phe Ile Asp Leu Thr Ser Pro Gln Lys Gly Met
 260 265 270
 Phe Gln Lys Leu Gln Glu Phe Phe Leu Gly Glu Glu
 275 280

K210- 3
 K211- 266
 K212- PRT
 K213- *Synechocystis*

K400- 3
 Met Asn Arg Ile Ile Val Val Thr Ser Gly Lys Gly Gly Val Gly Lys
 1 5 10 15
 Thr Thr Thr Thr Ala Asn Leu Gly Ala Ala Leu Ala Arg Leu Gly Lys
 20 25 30
 Lys Val Val Leu Ile Asp Ala Asp Phe Gly Leu Arg Asn Leu Asp Leu
 35 40 45
 Leu Leu Gly Leu Glu Gln Arg Ile Val Tyr Thr Ala Ile Asp Val Leu
 50 55 60
 Ala Asp Glu Cys Thr Ile Asp Lys Ala Leu Val Lys Asp Lys Arg Leu
 65 70 75 80
 Pro Asn Leu Val Leu Leu Pro Ala Ala Gln Asn Arg Ser Lys Asp Ala
 85 90 95
 Ile Asn Ala Glu Gln Met Gln Ser Leu Val Glu Gln Leu Lys Asp Lys
 100 105 110
 Phe Asp Tyr Ile Ile Ile Asp Cys Pro Ala Gly Ile Glu Ala Gly Phe
 115 120 125
 Arg Asn Ala Val Ala Pro Ala Gln Glu Ala Ile Ile Val Thr Thr Pro
 130 135 140
 Glu Met Ser Ala Val Arg Asp Ala Asp Arg Val Ile Gly Leu Leu Glu
 145 150 155 160
 Ala Glu Asp Ile Gly Lys Ile Ser Leu Ile Val Asn Arg Leu Arg Pro
 165 170 175
 Glu Met Val Gln Leu Asn Gln Met Ile Ser Val Glu Asp Ile Leu Asp
 180 185 190
 Leu Leu Ala Val Pro Leu Ile Gly Ile Leu Pro Asp Asp Gln Lys Ile
 195 200 205
 Ile Ile Ser Thr Asn Lys Gly Glu Pro Leu Val Met Glu Glu Lys Leu
 210 215 220
 Ser Val Pro Gly Leu Ala Phe Gln Asn Ile Ala Arg Arg Leu Glu Gly
 225 230 235 240
 Gln Asp Ile Pro Phe Leu Asp Phe Met Ala Ala His Asn Thr Leu Leu
 245 250 255
 Asn Arg Ile Arg Arg Arg Leu Leu Gly Gly
 260 265

K210- 4
 K211- 173
 K212- PRT
 K213- *Escherichia coli*

K400- 4
 Met Ala Arg Ile Ile Val Val Thr Ser Gly Lys Gly Gly Val Gly Lys
 1 5 10 15
 Thr Thr Ser Ser Ala Ala Ile Ala Thr Gly Leu Ala Gln Lys Gly Lys
 20 25 30
 Lys Thr Val Val Ile Asp Phe Asp Ile Gly Leu Arg Asn Leu Asp Leu
 35 40 45
 Ile Met Gly Cys Glu Arg Arg Val Val Tyr Asp Phe Val Asn Val Ile
 50 55 60
 Gln Gly Asp Ala Thr Leu Asn Gln Ala Leu Ile Lys Asp Lys Arg Thr

```

65          70          75          80
Glu Asn Leu Tyr Ile Leu Pro Ala Ser Gln Thr Arg Asp Lys Asp Ala
95          90          95
Leu Thr Arg Glu Gly Val Ala Lys Val Leu Asp Asp Leu Lys Ala Met
100          105          110
Asp Phe Glu Phe Ile Val Cys Asp Ser Pro Ala Gly Ile Glu Thr Gly
115          120          125
Ala Leu Met Ala Leu Tyr Phe Ala Asp Glu Ala Ile Ile Thr Thr Asn
130          135          140
Pro Glu Val Ser Ser Val Arg Asp Ser Asp Arg Ile Leu Gly Ile Leu
145          150          155
Ala Ser Lys Ser Arg Arg Ala Glu Asn Gly Glu Glu Pro Ile Lys Glu
160          165          170          175
His Leu Leu Leu Thr Arg Tyr Asn Pro Gly Arg Val Ser Arg Gly Asp
180          185          190
Met Leu Ser Met Glu Asp Val Leu Glu Ile Leu Arg Ile Lys Leu Val
195          200          205
Gly Val Ile Pro Glu Asp Gln Ser Val Leu Arg Ala Ser Asn Gln Gly
210          215          220
Glu Pro Val Ile Leu Asp Ile Asn Ala Asp Ala Gly Lys Ala Tyr Ala
225          230          235          240
Asp Thr Val Glu Arg Leu Leu Gly Glu Glu Arg Pro Phe Arg Phe Ile
245          250          255
Glu Glu Glu Lys Lys Gly Phe Leu Lys Arg Leu Phe Gly Gly
260          265          270

```

0210: 6

0211: 67

0212: PRT

0213: Synechocystis sp.

0430: 6

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Met Ile Leu Glu Leu Ile Glu Arg Leu Phe Ser Arg Ser Gly Lys Asn
1          5          10          15
Ser Gly Glu Asp Ala Arg Arg Arg Leu Lys Leu Val Ile Ala Asn Asp
20          25          30
Arg Ser Gly Leu Ser Pro Glu Met Met Glu Glu Met Arg Arg Glu Ile
35          40          45
Val Glu Val Val Ser Arg Tyr Val Glu Ile Asp Pro Gly Glu Met Glu
50          55          60
Phe Ser Leu Glu Ser Asp Gln Arg Met Thr Ala Leu Ile Ala Asn Leu
65          70          75          80
Pro Val Arg Arg Val Arg Arg Thr Lys Ala Lys Ser Glu Ala Gln Glu
85          90          95
Ser

```

0216: 6

0217: 88

0218: PRT

0219: Guillardia theta

0400: 6

```

Met Ile Thr Glu Phe Phe Glu Arg Leu Phe Leu Ser Asn Lys Gly Ser
1          5          10          15

```

Arg Glu Asp Val Lys Arg Arg Leu Lys Leu Val Leu Ala His Asp Arg
 20 25 30
 Ser Thr Leu Asn Ala Ser Thr Leu Glu Lys Met Arg Glu Glu Ile Leu
 35 40 45
 Leu Val Val Ser Lys Tyr Val Glu Leu Asp Thr Asp Ser Leu Glu Phe
 50 55 60
 Ser Ile Arg Thr Asp Ser Lys Met Thr Ala Leu Ile Ala Asn Leu Pro
 65 70 75 80
 Ile Arg Arg Ile Leu Lys Asp Ile
 85

00100 7

00110 198

00120 PRT

00130 *Chlorella protothecoides*

00100 7

Met Ala Thr Leu Leu Gln Gln Gly Thr Phe Ala Pro His Arg Ser Trp
 1 5 10 15
 Ser Gly Arg Lys Gly Thr Arg Arg Val Ser Lys Pro Thr Leu Asn Arg
 20 25 30
 Leu His Val Arg Ser Ser Ser Lys Ala Gly Ala Gly Pro Val Ser Asp
 35 40 45
 Ala His Leu Ala His Leu Arg Asn Ala Gly His Pro Val Pro Glu Ala
 50 55 60
 Pro Gly Leu Gln Gly Phe Val Ala Lys Leu Lys Ala Ala Trp Gln Ile
 65 70 75 80
 Phe Phe Pro Glu Lys Pro Pro Val Leu Thr Pro Lys Asp Glu Gly Lys
 85 90 95
 Asn Arg Leu Arg Met Ile Leu Val Ala Asp Arg Cys Gly Ile Thr Pro
 100 105 110
 Asp Ser Leu Thr Gly Met Arg Glu Ser Ile Val Gln Ala Val Ser Ala
 115 120 125
 Tyr Val Asp Ile Glu Thr Glu Glu Ile Glu Val Asn Leu Ser Thr
 130 135 140
 Arg Pro Glu Leu Gly Thr Ile Tyr Ser Val Ala Val Pro Val Arg Arg
 145 150 155 160
 Val Lys Ser Arg Arg Ile Gly Gly Val Asp Thr Ser Glu Asp Gly Lys
 165 170 175
 Ile Ile Val Lys Trp Asp Pro Lys Asp Pro Asn Ser Asp Pro Ser Asp
 180 185 190
 Gln Phe Pro Phe Gly Val
 195

00100 8

00110 88

00120 PRT

00130 *Escherichia coli*

00100 8

Met Ala Leu Leu Asp Phe Phe Leu Ser Arg Lys Lys Asn Thr Ala Asn
 1 5 10 15
 Ile Ala Lys Glu Arg Leu Gln Ile Ile Val Ala Glu Arg Arg Arg Ser
 20 25 30
 Asp Ala Glu Pro His Tyr Leu Pro Gln Leu Arg Lys Asp Ile Leu Glu

35	40	45
Val Ile Cys Lys Tyr Val Gln Ile Asp Pro Glu Met Val Thr Val Gln		
50	55	60
Leu Glu Gln Lys Asp Gly Asp Ile Ser Ile Leu Glu Leu Asn Val Thr		
65	70	75
Leu Pro Glu Ala Glu Glu Leu Lys		80
35		

02100-8

02110-87

02120-PRT

02130-Neisseria meningitidis

04000-9

Met Ser Leu Ile Glu Phe Leu Phe Gly Arg Lys Gln Lys Thr Ala Thr	
1	5
	10
Val Ala Arg Asp Arg Leu Gln Ile Ile Ile Ala Gln Glu Arg Ala Gln	
	20
	25
	30
Glu Gly Gln Thr Pro Asp Tyr Leu Pro Thr Leu Arg Lys Glu Leu Met	
	35
	40
	45
Glu Val Leu Ser Lys Tyr Val Asn Val Ser Leu Asp Asn Ile Arg Ile	
	50
	55
	60
Ser Gln Glu Lys Gln Asp Gly Met Asp Val Leu Glu Leu Asn Ile Thr	
65	70
	75
	80
Leu Pro Glu Gln Lys Lys Val	
	35

02100-10

02110-84

02120-PRT

02130-Pseudomonas aeruginosa

04000-10

Met Ser Leu Leu Asp Phe Phe Arg Ser Arg Lys Ser Gln Asn Ser Ala	
1	5
	10
	15
Ser Ile Ala Lys Glu Arg Leu Gln Ile Ile Val Ala His Glu Arg Gly	
	20
	25
	30
Gln Arg Ala Gln Pro Asp Tyr Leu Pro Gln Leu Gln Lys Asp Leu Leu	
	35
	40
	45
Glu Val Ile Arg Lys Tyr Val Pro Ile Asp Gln Glu Gln Ile Gln Val	
	50
	55
	60
Glu Leu Glu Asn Gln Gly Asn Cys Ser Ile Leu Glu Leu Asn Ile Thr	
65	70
	75
	80
Leu Pro Asp Arg	

02100-11

02110-P22

02120-PRT

02130-Arabidopsis thaliana

04000-11

Met Ala Met Ser Ser Gly Thr Leu Arg Ile Ser Ala Thr Leu Val Ser	
1	5
	10
	15

```

Pro Tyr His His His His Arg Asn Arg Leu Ser Leu Pro Ser Ser Ser
      20      25      30
Ser Lys Val Asp Phe Thr Gly Phe Ile Ser Asn Gly Val Asn Ser Leu
      35      40      45
Gln Thr Gln Lys Cys Thr Pro Gly Leu Ala Ile Ser Arg Glu Asn Thr
      50      55      60
Arg Gly Gln Val Lys Val Leu Ala Arg Asn Thr Gly Asp Tyr Glu Leu
      65      70      75      80
Ser Pro Ser Pro Ala Glu Gln Glu Ile Glu Ser Phe Leu Tyr Asn Ala
      85      90      95
Ile Asn Met Gly Phe Phe Asp Arg Leu Asn Leu Ala Trp Lys Ile Ile
      100     105     110
Phe Pro Ser His Ala Ser Arg Arg Ser Ser Asn Ala Arg Ile Ala Lys
      115     120     125
Gln Arg Leu Lys Met Ile Leu Phe Ser Asp Arg Cys Asp Val Ser Asp
      130     135     140
Gln Ala Lys Arg Lys Ile Val Asn Asn Ile Ile His Ala Leu Ser Asp
      145     150     155     160
Phe Val Glu Ile Gln Ser Glu Glu Lys Val Gln Leu Asn Val Ser Thr
      165     170     175
Asp Gly Asp Leu Gly Thr Ile Tyr Ser Val Thr Val Pro Val Arg Arg
      180     185     190
Val Lys Pro Gln Tyr Gln Asp Val Asp Glu Ala Gly Thr Ile Thr Asn
      195     200     205
Val Gln Tyr Lys Asp Thr Arg Asp Gly Ser Val Asp Val Arg Phe Asp
      210     215     220
Phe Tyr Val Pro Glu
220

```

```

#210-12
#211-12
#212- DNA
#213- Artificial Sequence

```

```

#210-
#213- primer

```

```

#400-11
tctcgagaat ggctctctg agattgttc

```

29

```

#210-13
#211-22
#212- DNA
#213- Artificial Sequence

```

```

#210-
#213- primer

```

```

#400-13
ttctagatt gccatttagc cgcctaaag

```

28

```

#210-14
#211-22
#212- DNA
#213- Artificial Sequence

```

```

<220>
<223> primer

<400> 14
agtctctcgg taatggcgat gt                22

<210> 15
<211> 13
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 15
gactgtacct ttccatcaact ct                22

<210> 16
<211> 13
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 16
ttgagctcac ctccaacatt aaaatcgaac ctg    33

<210> 17
<211> 13
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 17
ttgagctcat gagtaaagga gaagaact          28

<210> 18
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 18
attattttgta tagttcatcc atg              23

```